THE

JOURNAL OF GAS LIGHTING.

PUBLISHED QUARTERLY,

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No. 7.] LONDON, AUGUST 10, 1849. [SUPPLEMENT { Price 4d. Stamped. „ 3d. Unstamped.

THE Proprietor of the "Journal of Gas Lighting" is in want of a YOUNG MAN acquainted with Gas Works, as CLERK and COLLECTOR, and to make himself generally useful. Application to be made in writing to Mr. T. G. BARLOW, 32, Bucklersbury, London.

PRICES of Clegg's New Patent Gas METERS, &c.

STATION METERS.

To measure	60,000 cubic feet per 24 hours	£50
„	120,000 „ „	75
„	240,000 „ „	100
„	500,000 „ „	150
„	1,000,000 „ „	250
„	2,000,000 „ „	400

Meters for private consumers, which regulate the lights, will shortly be ready, of which due notice will be given.

Gasholders, with tanks complete for action, containing 100,000,000 cubic feet, erected for £5500.

Retorts charged and discharged by machinery, whereby a great saving is effected, and the value of the coke improved 30 per cent.

24, Regent-sqnare, London, Aug., 1849.

Just published in 8vo., price 1s. 6d., or free by post, 2s.,

GAS Lighting: its Progress and its PROSPECTS.

By J. O. N. RUTTER, F.R.A.S.

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A. WRIGHT, Gas Engineer and Meter Manufacturer, 55, Millbank-street, near the Houses of Parliament, Westminster, respectfully calls the attention of Gas Companies and Engineers who are not yet provided with Station Meters to the fact that he has erected two of the largest machines of this kind in existence, the one for the Chartered Gas Company, London, the other for the Hibernia Gas Company, Dublin, for both of which he has obtained the highest testimonials.

To this branch of business A. W. devotes much attention, as well as to the Manufacture of all kinds of Experimental Machinery for Gas purposes.

Consumers' Meters of all sizes at the usual prices, with a liberal discount to wholesale purchasers.

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As the Inventors consider the superiority of these Valves now fully proved, it remains simply to quote the prices:—

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From 14 in. to 10 in., inclusive,	13s.	3s. 6d.
„ 9 in. to 4 in., „	14s.	2s. 6d.
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A YOUNG Man, who is thoroughly acquainted with the Manufacturing of Gas Meters, wants a SITUATION in the above line, or to do general repairs: he has also a good knowledge of gas-fittings. Satisfactory reference as to ability, &c., can be given.

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RUFFORD'S FIRE-BRICKS, RETORTS, CRUCIBLES, and CLAY. A large stock always on hand, and every description of Fire-proof goods carefully and promptly made to order.

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Station Meters, Governors, Pressure Registers, Experimental Meters, and every description of Gas Apparatus, the accuracy of which may be fully relied upon.

Edge's Improved Portable Photometer—none like it. See JOURNAL OF GAS LIGHTING, June 11, 1849.

Edge's Triple Valve, both Hydraulic and Slide, for Station Meters, Governors, and Purifiers, or, indeed, for any Apparatus requiring a by-pass, being "*three valves in one*," and at two-thirds the cost of the ordinary slide-valves.

THOMAS EDGE begs to call the attention of Gas Companies to the following Improvements possessed by his Patent Meter, contrasted with the defects of the common Meter as generally made at the present time:—

DEFECTS IN OLD METER.

OLD INDEX.

Difficulty in reading off the quantity consumed.

Frequent mistakes and misunderstandings in consequence.

OLD VALVE AND FLOAT.

This often becomes a fixture by the corrosion of the guide-wires, and fails to show a want of water in the Meter, whereby the Company is a loser.

OLD SYPHON AND SIDE-PLUG.

The Gas Company can at any time be defrauded at these points.

Liability to fire and explosion when the Syphon-plug is left out and gas on, or to explode the meter when the gas is off.

By unscrewing the side-plug, water can be abstracted, so as to make the Meter register considerably less than it ought.

IMPROVEMENTS IN PATENT METER.

PATENT INDEX.

No difficulty at all. The Index is read off as a common row of figures.

PATENT VALVE AND FLOAT.

The above cannot possibly become fixed, as the connecting wire never can touch any contiguous part; consequently the Float must fall when the water decreases.

PATENT SYPHON AND WATER-BOX.

No possibility of abstracting Gas, inasmuch as the Syphon-plug is sealed off by the dip-pipe below the water-box.

No side-plug is required, so that the water cannot possibly be drawn off below its proper level.

Again, the gas need not be turned off, should the Meter require water while the lights are in use, which is necessarily the case with other meters, and by which the consumer is subjected to serious inconvenience.

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GUTTA Percha Tubing, being unaffected by moisture, acids, alkalies, grease, &c., is useful for the conveyance of Water, Oil, Chemicals, Liquid Manure, &c. It is peculiarly valuable for Drain and Soil Pipes. In case of any stoppage, an incision can be made in the tubing with a sharp knife, and readily closed again by means of a warm iron. Its strength is extraordinary; the small half-inch diameter tubing having resisted a pressure of 250lb. on the square inch without bursting.

Gutta Percha is totally impervious to wet, and may be steeped in water or buried in damp or marshy grounds for years. IT IS NOT SO LIABLE TO INCRUSTATION, and, from its peculiar property as a non-conductor, is not affected so soon by the frost of winter as metal piping.

The smaller sizes of the Tubing may be had in lengths of from 100 to 400 feet, and the larger sizes of 50 feet, each.

The extraordinary power possessed by Gutta Percha Tubing as a CONDUCTOR OF SOUND renders it invaluable for conveying messages from one room or building to another.

Every variety of Gutta Percha Articles manufactured at the Company's Works, Wharf-road, City-road, London; and sold by their Wholesale Dealers in town or country.

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MANUFACTORY—BROAD-STREET, BIRMINGHAM,

Manufacturers of Glass Chandeliers, Glass Lustres, Table Glass, &c. &c.

ELEGANT CRYSTAL GLASS CHANDELIERS, FOR GAS

(Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable for DRAWING-ROOMS and BALL-ROOMS. From £4. 15s., upwards. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.

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Gas Meter and Apparatus Works, 19 and 20, Marsham-street, Westminster.

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No. 66, Snow-hill, London.

WILLIAM SMITH, by the improvements he has made in the Wet Meter, and which he has secured by her Majesty's Royal Letters Patent, the accuracy of their registry is rendered certain by the introduction of the adjusting slide and hydraulic, whereby a Perfect Water Level is readily obtained, and the Hydraulic precludes the possibility of abstracting water from the meter by increased pressure or otherwise, thus surmounting the great desideratum of the Wet Meter. In his Patent Equitable Gas Meter neatness and strength are combined, the backs and fronts of the case being stamped by powerful machinery out of thick plate iron (tinned or galvanized); and the internal construction is of the best metal, which will resist the action of any impurity in the gas.

Old Meters may readily have the adjusting slide and hydraulic applied, thereby having accurate measurement assured.

Station Meters, Governors, &c., made on the shortest notice.

STEWART'S PATENT CAST-IRON PIPES FOR GAS OR WATER MAINS.

MR. ALEXANDER REID, Monument-chambers, 14, FISH-STREET-HILL, London, is prepared to undertake contracts to any extent for the supply of Stewart's Patent Pipes, either of English or Scotch manufacture.

These Pipes are made in dry sand, and are cast upright in a mould, consisting of one piece instead of three, as is the case in the old mode, by which means great regularity in thickness is ensured.

A. R. can also supply Pipe-proving Machines of the most modern construction.

TODD, SONS, and CO. solicit orders for Pipes, Iron Retorts, Gasholders, other Apparatus, and Castings for Gas Works. Weighing Machines to weigh four cwt. to four tons. A second-hand Gasholder, with Pillars, Weights, and Chains, at present for Sale.

Turner's-court, Argyle-street, GLASGOW.

COAL Tar for Sale.—The Carlisle Gas Company will receive Tenders, up to the 13th of September, for the whole of their COAL TAR for a period of one, two, or three years, from the 1st of October next. The price to be per gallon on the Company's premises. The Contractor to find casks, and pay all other expenses of cartage and removal, the Gas Company retaining the right of selling small quantities to their usual customers. The annual quantity generated will be about thirty thousand gallons. Tenders to be endorsed "Tender for Coal Tar."

Gas Works, Carlisle, July 26, 1849.

R. LAIDLAW AND SON, GAS ENGINEERS,

BRASS AND IRON FOUNDERS AND MANUFACTURERS OF GAS METERS, MALLEABLE IRON AND BLOCK-TIN TUBES, GAS LAMPS, PENDANTS, BRACKETS, AND FITTINGS, RETORTS, PIPES, and all APPARATUS required for GAS WORKS, of the best quality.
ORDERS promptly executed, and ESTIMATES given.

EDINBURGH AND GLASGOW.

THOMAS ALLAN and CO., SPRING-BANK IRONWORKS, GLASGOW, have always on hand a large assortment of GAS PIPES and other Castings connected with Gas Works, which they beg to solicit orders for.

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The above, as well as numerous other Castings, at very low prices, at JONES'S, Iron-bridge Wharf, No. 6, Bankside, Southwark, London.

TO DIRECTORS AND MANAGERS OF GAS COMPANIES.

GLOBE Patent Tube Works, Wednes-bury.—Gentlemen,—We beg to solicit your orders for Iron Gas Tubes and Connections.
Mr. CORNELIUS WHITEHOUSE, the Original Patentee of the Tubes manufactured for so many years by Mr. JAMES RUSSELL, of Wednesbury (and to whom the Patent was disposed), having made further Improvements, which are patented, is thereby enabled to manufacture Tubes of a superior quality to any hitherto offered to the public.
In soliciting your favours we beg to assure you that the most prompt attention shall be given to orders entrusted to our care.—We are, gentlemen, your obedient servants, C. WHITEHOUSE and Co.

PATENT FLEXIBLE GAS TUBING.

JAMES LYNE HANCOCK'S Vulcanized Indiarubber Hose Pipes and Tubing. Manufactory (and Warehouse), Goswell-mews, Goswell-road, London.
Gas Companies, Engineers, Gas Fitters, and the Trade generally, are respectfully informed this Tubing is now manufactured to any size, from ¼ inch bore and upwards, in 100-feet lengths, and perfectly cylindrical, either with or without a spiral wire inside.
VULCANIZED GLAZED FLEXIBLE TUBING, from ¼ inch up to 1 inch diameter, made in 24-feet lengths; or, covered with silk or worsted, up to 100 feet.
VULCANIZED HOSE, for FIRE ENGINES, BREWERS' USE, and for standing great pressures (Rubber and Cloth combined), made to any length or size to fit the necessary screws, &c.
VULCANIZED INDIARUBBER AIR-TIGHT BAGS, made any size, for Gas Mains, with flexible tubes attached, and fitted with stopcocks complete.

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Many of the Gas Companies have adopted them for their Street Lamp Cocks, and thereby prevent the possibility of waste.
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GEORGE BARLOW and SON, 9, Charter-house-square, London, beg to offer Retorts, Tanks, Gasometers, Washers, Condensers, Purifiers, Valves, and all other Apparatus for Gas Works, at the lowest prices. Also Mr. Orlando Brothers' PATENT FIRE CLAY RETORTS. Estimates supplied for Gas Works, and the most approved plans for setting Retorts.

CAST Iron Retorts, Socket Pipes, and Connections of every size suitable for Gas and Water Works, Lamp Columns, Wrought Iron Tubing, Hot Water Pipes, Rain Water Pipes, and Eaves Gutters, in stock, and sold on the lowest terms, at LYNCH WHITE'S Iron Wharf, 66, Bankside, London.

ESTABLISHED 1827.

JOHN BEVERLEY and SON, Manufacturers of the Improved METALLIC GAS METERS, 68, BRIGGATE, LEEDS,
In returning thanks to Gas Companies, and those who have been pleased to patronize the use of their Gas Meters, take leave to observe that they still continue to make the outer cases of Cast Iron, which are carefully fitted and put together with screws, and the interior wheel or drum of a composition that has stood the test of years.
Dealers in all kinds of Gas Fittings, Tubing, &c. &c.

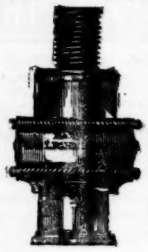
WEST BROTHERS and CO., LATE **THOMAS WEST,**

GAS METER MANUFACTURERS, BRASS FOUNDERS, &c., UNION-STREET, OLDHAM.
Station and Experimental Meters, Gas Pressure Registers, Gauges, Experimental Gas Holders, Governors, Slide Valves, &c. &c.

M. KELLY, Cast Iron Wharf, 31, Bankside, London.—Retorts of superior quality, Socket and Flange Pipes, Bends, Branches, Syphons, and every description of Castings for Gas and Water Works, Gasometers, Tanks, Purifiers, Condensers, &c., erected complete, or the materials supplied.
Gas Valves and Sluice Cocks on an improved principle. Patent Gas Tubing and Connections.
A stock of the above articles kept.
The Pipes and Retorts supplied by M. K. are cast vertically, which ensures soundness and equality of thickness throughout.

THE Economic Gas-cooking Stove.— With this Registered Patent Apparatus, COOKING by GAS is performed with little trouble, cleanliness, and economy; and, if necessary, where there is no chimney. Those who have not seen how much heat can be obtained from a few jets of Gas, scientifically applied for Chemical, Manufacturing, or Culinary Purposes, are invited to inspect the different kinds of Apparatus at C. RICKET'S Manufactory, 5, Agar-street, Strand, opposite Charing-cross Hospital.

IT is a Glaring Fact that Guise's New Brilliant GAS BURNER, which is perfectly shadowless, gives a purer and greater light, with less gas, than any other; and his original Shadowless Gas Burners, which are in such general use, are well known to be the most economical burners yet invented.
J. G. cautions the public against fraudulent imitations, as all his Burners are marked "Guise Patent."
Guise's Catoptric Reflectors are superior to anything of the kind yet invented for brilliancy and power of reflection. One trial will prove these facts. They are to be had of all respectable Gas-fitters, and at the Manufactory, 75, Margaret-street, Wilmington-square, London.



THE New Patent GAS LIGHT MONITOR, adapted to every description of Burner, and supplied at a cost placing it within the reach of every consumer of Gas, regulates the flame to any required height, economizing the consumption, and preventing the danger and inconvenience arising from the flaring and smoking of lights. It may be seen in daily use at the office of the Patentees, 20, King William-street, Charing-cross.

BRETTELL and WHITEHOUSE, late Brettell and Bufford, beg to inform Gas Companies and others requiring best STOURBRIDGE BRICKS and CLAY that they continue making all kinds of BRICKS, and warrant all their goods fully equal to any house in the trade.
Fire Brick Works, Stourbridge.

H. JONES, Gas Meter Manufacturer, No. 44, OLD-STREET, St. Luke's, London, begs respectfully to call the attention of Gas Companies to his latest improvements in the WET METER, by means of which water cannot be abstracted, neither can Gas by any possibility pass through the Meter without registering.

ESTABLISHED IN 1834.

S. KING, Gas Meter Manufacturer, 21, Cock-lane, West Smithfield, London.
Meters made of the best materials and workmanship, with all the recent improvements, and warranted correct in registration.

METER INDICES.

J. CLUER, Gas Meter, Index Maker, and Model Machinist, No. 1, Bowling-green-lane, Clerkenwell, London.
INDICES and all other Apparatus for Gas Meters of every size and kind, made on the shortest notice, of the best metal, and of superior workmanship.

TO Gas Companies, Water Companies, and Others.—TO BE DISPOSED OF, about NINETY 24-Inch MAIN PIPES, at — per ton.
Application for particulars as to price, &c., to be made to the Storekeeper at the Chartered Gas Light and Coke Company's Works, Horseferry-road, Westminster.—February, 1849.

IRISH MANUFACTURE.

JAMES GRAY and CO. continue to make every description of FIRE-BRICKS, TILES, and BLOCKS used in setting Retorts, all of the very best fire clay.
Irish Gas Companies can be supplied with as cheap and good an article, manufactured in their own country, as any they can import.
Fire-clay and Brick Works, Coal Island, near Dungannon, county of Tyrone, May 28, 1849.
N.B. Flooring, Ridge, and Oven Tiles, Water Pipes, Flue Linings, &c. &c.

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42, Cambridge-street-crescent, Birmingham.
Works—Smethwick, Staffordshire. London Warehouse—68, Upper Thames-street.

JENNINGS'S

PATENT INDIARUBBER TUBE GASCOCKS.

The Patentee begs to inform all persons interested that the INDIARUBBER TUBE COCK has been found to answer most admirably for all Gas purposes. Great numbers have been used, and references can be given to some that have been in use for eighteen months and upwards.

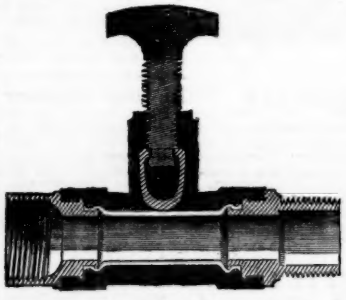

Fig. 1.

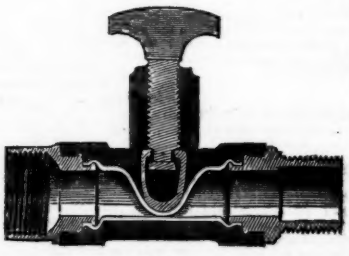

Fig. 2.

The simplicity of this Cock is worthy the attention of scientific men; when open it forms a straight and continuous pipe, free from all obstruction, as shown in fig. 1, and the passage of the gas is impeded, or altogether stopped, by pressing on the OUTSIDE of the tube, as shown in fig. 2. There can be NO ESCAPE laterally, as the working parts have no connection with the interior.
The advantages derived from its use are these: its being free from all friction—will not, like the Plug-cock, become set fast or unsound; it offers as free a passage as the pipe itself; the facility of repair (should it ever need it) is also worthy of attention, as the introduction of a fresh piece of vulcanized rubber Tube will, at any time, make it equal to new.

For Testimonials and Prices apply to the Inventor and Patentee,

GEORGE JENNINGS, 29, GREAT CHARLOTTE-STREET, BLACKFRIARS-ROAD, LONDON.

N. B. All kinds of Cocks for Water Purposes can be had in Iron, and they are warranted to stand any pressure, as the metal casing must *burst* before the Cock can become injured.
For drawing off Wine, Vinegar, Cider, or any Liquor containing Acid, this Cock is invaluable, as no Verdigris can be generated, as is the case with all other Cocks.

CONTENTS.

	PAGE
Circular to Gas Companies	95
Communicated Articles:—	
Specification of an Iron Tank and Gasholder	95
The Peat Scheme	96
Correspondence:—	
Theory and Practice	97
Observations on Dr. Fyfe's Report on the Comparative Value of Coal for the Purposes of Illumination	98
Register of New Patents:—	
Stewart, for Improvements in the Manufacture of Moulds and Cores for casting Iron and other substances	99
Reece, for Improvements in Heating Peat, and obtaining products therefrom	99
Price Current	99

NOTICES.

All communications relative to the editing of the JOURNAL OF GAS LIGHTING, and orders for Advertisements, to be addressed to the Editor and Proprietor, THOMAS G. BARLOW, Civil Engineer, 32, Bucklersbury, London. Subscribers who have not yet remitted the amount of their subscription are requested to do so by post-office order to William Strange, 21, Paternoster-row, London.

The Terms of Subscription are:—

Six Shillings per Annum for the Quarterly Journal and Monthly Supplement, payable in advance.

Post-office orders to be made payable to WILLIAM STRANGE.

Advertisements are inserted at the rate of 5s. per six lines, and 6d. per line for all beyond, subject to the following discounts, if paid in advance:—

15	per cent. for	3	insertions.
25	ditto	6	ditto.
33⅓	ditto	12	ditto.

Advertisers in the JOURNAL OF GAS LIGHTING are respectfully informed that W. T. Hunt is no longer in the employ of the proprietor.

The Editor will be particularly obliged by his friends forwarding to him Notices of all Meetings, Trials, or Appeals which it may be interesting to the Gas World to have reported.

Circular to Gas Companies.

It is with much satisfaction we announce to our readers that measures are now in progress for the formation of an INSTITUTION OF GAS ENGINEERS, under the patronage of several of the most eminent men of the profession, including those to whom we are indebted in a great measure for the advancement of gas-lighting in its earlier stages. The advantages which must result from an Institution of this nature, both to those associated and to the public, have been so frequently and earnestly urged upon us by our numerous correspondents, that we should have laid ourselves open to the imputation of apathy had we delayed eliciting the opinion of the heads of the profession upon this important subject; and we are happy to say that, with few exceptions, it has been given in the affirmative. Some, indeed, may have had doubts whether a body, numerically small compared with other associated bodies, could carry out and support such an undertaking; but none have doubted its utility, and we are satisfied that there are ample elements for the formation and maintenance of such an association: our own subscribers will, indeed, form a strong body of themselves. We hope to be able in our next number to give an outline of the project; suffice it at present to say that, though the seat of the institution must necessarily be in the metropolis, yet it is proposed to hold annual meetings in the larger provincial towns in the vicinity of the great coal-fields, such as Birmingham, Manchester, Liverpool, Newcastle, Edinburgh, Glasgow, Bristol, Swansea, &c., on the plan of the British Association. Such meetings cannot fail to be highly instructive and useful to the profession and those connected with it. A model-room, library, and museum of coals, classified and arranged according to the value of their gaseous products, would of course be one of the objects to which the early attention of the members would be directed; and we feel assured that with the hearty co-operation of our subscribers the success of the project is no longer doubtful.

Communicated Articles.

SPECIFICATION OF AN IRON TANK AND GASHOLDER.

CAST-IRON TANK.

One cast-iron tank of 101 feet diameter, and 22½ feet depth, both inside measure and exclusive of the flanches. The flanches to the bottom to be on the inside, the others on the outside, and the whole of them to project 3½ inches at the least. The bottom is to be 1 inch thick throughout, excepting the outside row of plates and the row next to it; the outside row to be 1¼ inch thick, and the next row to diminish in thickness from 1¼ to 1 inch. The centre plate is to be 1½ inch thick. The first tier of side plates is to be 1½ inch, the second 1¼, the third 1⅛ inch, the fourth 1 inch, and the fifth or top tier 1 inch thick. Each of the side plates is to be of such a width as to allow of 75 in the circumference; each plate to be 4 feet 6½ inches deep; and each tier of plates is to be numbered in the casting of them, such numbers to be 1, 2, 3, 4, 5, beginning at the bottom tier.

The tank is to be bound together by five wrought-iron hoops, which are to be fixed as shown in the drawings, each hoop to be 5 inches wide and 1¼ inch thick.

The tank is to be bolted together with full 1-inch bolts of wrought iron, not more than 7 inches asunder from centre to centre of each bolt, and properly cemented together with iron cement. A flanch column is to be fixed on the centre plate of the tank so as to support the roof of the gas holder when down, and to be of the height and dimensions shown in the drawings. The plates of the tank, exclusive of the bolts, cement, hoops, and centre column, to weigh tons; and all to be delivered, and the tank to be erected agreeably to drawings,* and to the satisfaction of the committee of management of the company or their engineer, for a sum to be fixed, free of any other charge whatsoever, unless the aggregate weight of the plates shall exceed or be less than six tons of the estimate above stated, in which case the price to be charged or deducted is to be after the rate of £ per ton. The company is, however, to pay for nothing beyond the said excess of six tons, and, should the deficiency be more than the six tons, then the company is to be allowed from the price to be paid for the tank after the rate of £20 per ton, for such deficiency, whatever it may be.

Each of the plates and castings is to be numbered and marked on the inside with its own weight with whitelead paint. The company is to provide good and proper brick or stone foundations, and keep out water; but the contractor is to find and use the necessary materials for scaffolding, and also all pulley blocks and falls, and everyother material that may be required in erecting and completing the tank.

The whole of the plates and materials for the tank are to be delivered, and the tank is to be erected complete, on or before the end of thirteen weeks after notice shall have been sent in writing to the contractor from the company, either by hand or by post, that the foundations for the tank are sufficiently prepared for him to begin his work.

Should the tank not be completed as above stated, then the contractor is to be subject to a fine to be reserved from his account of £50 per week from the date at which it is agreed that the tank shall be completed; and, should the delay exceed four weeks of the time stipulated, then the company is to be at liberty to employ any other party to complete the tank without being liable to the contractor for payment, either for the plates delivered or such part of the works as he may already have executed.

HYDRAULIC ROOM. TWO 18-INCH VALVES AND SIX 18-INCH QUARTER BENDS.

One circular hydraulic room with a bottom and top, to be 12 feet diameter and 18 feet deep inside measure, and ¾ of an inch thick throughout, with the requisite flanches. The flanches to the bottom are to be on the inside, and all the others on the outside. The whole to be fixed together with ¾-inch bolts fixed in the same manner as in the tank, and completed according to the plan and dimensions described in the drawings.

Two 18-inch pneumatic lifting valves, and six 18-inch quarter bends, to be cast agreeably to drawings, and the said valves are to be fitted ready for use. The contractor, on failing to deliver and complete the said hydraulic-room valves and bends, to the satisfaction of the committee of management or their engineer, on or before the expiration of the above notice referring to the tank, he is to be subject to a penalty, to be subtracted from his account, of £100; and, should the delay exceed four weeks of the time stipulated, then the company is to be at liberty to employ any other party to complete the said hydraulic-room valves and bends, without being liable to the contractor, either for the castings delivered, or for such part of the said hydraulic-room valves and bends as he may have already executed.

GASHOLDER.

One circular gasholder to be made of the best plate and English iron, upon the telescope principle, to the above-mentioned tank. It is to be in two parts, and correspond in diameter and height with the dimensions given in the drawings. The roof and top tier of side plates of the gasholder are to be of No. 11 wire gauge, and all the other side plates are to be of No. 12 wire gauge. Each part is to be 22 feet deep, and is to have a hydraulic joint 15 inches deep and 8 inches wide of No. 10 wire gauge, one part of the joint to be connected with the top of the bottom part. The top edge of the cup and the bottom edge of the dip are to be bound by half-round iron, 2 inches by 1 inch thick. The roof of the gasholder is to be a dome roof, supported within in the usual way, with sufficient

* Copies of the drawings above alluded to may be procured at a moderate charge on application to the Editor.

wrought-iron framework, and twenty-four trusses, and the requisite intermediate rafter bars, strutted as shown in the drawings. The side of the upper part is to have twelve vertical truss bars, equidistant from each other in the circumference inside. The lower part is to have twenty vertical plates of flat iron, 3 inches by ⅜ of an inch, reaching from the top to the bottom on the inside, with the requisite intermediate bars strutted as shown in the drawings. The gasholder is to have twenty-four cast-iron guide pulleys and carriages, twelve of which are to be attached to the upper part and twelve to the top of the bottom part to work upon guide rods, and also twelve friction rollers are to be attached to the dip of the hydraulic cup on the top of the lower part of the gasholder, to work between its upper and lower parts; thirty-six friction rollers are also to be attached to the bottom edge of the lower part, to work between it and the tank, all as shown in the drawings. The whole to be of the requisite dimensions to suit their respective places, and the rim of the lower part is to be strengthened with a double wrought-iron curb of angle iron 4 inches by 1 inch at the root, and a ring of bar iron 4 inches by 1 inch in thickness. The sheets of the gasholder are not to exceed 4 feet in length by 2 feet 2 inches in height; and the rivets are not to be less than ¼ inch in diameter, nor more than 1 inch asunder from centre to centre, their heads showing on the outside. Twelve eyebolts and shackles are to be attached to the upper edge of each gasholder at equal distances from each other.

The said gasholder, &c., are to be delivered and executed complete according to drawings, and so as to apply to the said tank, and to the columns and frame after mentioned, and to the satisfaction of the committee of management or their engineer. The contractor is to provide himself with and use the pulley blocks and falls, and every other necessary material for constructing the scaffolding, which he is to erect at his own expense.

The materials of the gasholder, including friction rollers, pulleys, &c. &c., and all their appendages, are to be delivered, and the whole erected and fitted complete, on or before the end of thirteen weeks after notice shall have been given as above stated in reference to the tank, that the said tank is sufficiently completed to enable the contractor to commence the building of the said gasholder, &c. &c., for a sum to be fixed free of any other charge, such sum to include the price of the columns and frame after mentioned.

Should the said gasholder, with all its appendages, and also the columns and frame after mentioned, not be completed as above stated, then the contractor is to be subject to a fine of £50 per week, to be reserved from his account, from the date of the period wherein it may be agreed that they shall be completed; and, should the delay exceed four weeks of the time stipulated, then the company is to be at liberty to employ any other party to complete the said works, without being at all liable to the contractor for payment for any part of the works which he may have already executed.

COLUMNS AND FRAME.

The said gasholder is to have twelve cast-iron columns, and a cast-iron frame to connect them together at equal distances from each other in the circumference, as shown in the drawings.

Each column is to be composed of four lengths, and when erected to be, including the said frame, about 62½ feet high, from the top of the foundations to the top of the frame, so that the whole frame shall be arranged to one level. The columns to taper from 24 inches diameter at their bases to 16 inches at their tops, and be 1⅛ inch thick at bottom, tapering to 1 inch at top. The metal of the frame is to be 1 inch thick throughout. Each casting is to be numbered and marked with its weight with whitelead paint.

Twelve wrought-iron guide rods of railroad iron, according to drawings, and with the requisite chairs to be fixed and applied one to each column, and reach from the top of the tank to the under side of the frame; and each column is to have a foundation plate of cast-iron 6½ feet long, 4 feet wide, and 2 inches thick, and four wrought-iron holding-down pins of 2 inches square iron, 10 feet long each, and to be fixed with the necessary lead as shown in the drawings.

The columns are to be bound together with a cast-iron frame as mentioned, which is to be composed of twenty-four girders, to be connected in the circumference of the tank from column to column at top, and each girder is to be fitted to its respective columns and to its respective girders. The whole to be properly chipped and secured together with proper screwed bolts, nuts, collars, &c., of wrought iron, cemented together with iron cement. The plan of the frame, and also for the elevation section, bearings, and mode of connecting the columns, guide rods, and girders, to be according to drawings.

The said columns and frame, with their appendages, are to be delivered and erected complete, so as to apply to the said gasholder and tank, and to the satisfaction of the committee of management or their engineer, and within the time and under the conditions named in respect to the gasholder.

GENERAL CONDITIONS.

The contractor is to provide his own working drawings from drawings to be furnished by the company, and mutually attested on the part of the company and by the contractor; and in the progress of the works, should any alterations, additions, or omissions, to or in the same, be made on the part of the company, such alterations, additions, and omissions are not in any respect to vitiate the contract, but the value thereof is to be estimated by the committee of management, and added to, or subtracted from, the sum or sums to be paid, as the case may be.

The cast iron is to be of the cold-blast second runnings, from cold-blast English or Welsh pig iron, free from slag or cinder, and no Scotch iron is on any account to be used. The other descriptions of iron are to be of the best English.

The contractor is to execute the whole of the works he may undertake, in all respects, in a workmanlike manner and with the best materials for the purpose. He is, moreover, to guarantee the completeness, perfectness, and lasting of the whole of the said works for the space of two years from the day of the date of the engineer's certificate declaring his opinion that they are satisfactorily completed.

Payment to be made at the end of three months from the date of the said certificate; but should the committee of management think proper, at the request of the contractor, to pay any sum or sums of money in advance and on account, then the contractor is to allow a discount of one-half per cent. per month for any such anticipated payment.

The committee of management will not be bound to accept that tender which may be the lowest in price.

FORM OF TENDER.

——, the undersigned, hereby agree to execute the whole of the works particularised in the above specification, within the period of time also stated, and in all respects according to the intent and meaning of it, and subject to the said penalties, which hereby agree to pay for nonfulfilment of this contract, that is to say, for the said tank, the sum of £ ; for the said hydraulic room, valves, and bends, the sum of £ ; and for the said gasholder, columns, and frame, the sum of £ : making in the whole the sum of £ . And for the true performance of the above works, and every part of them, hereby bind sel , heirs, executors, administrators and assigns, to the said Gas Light and Coke Company, and their successors, in the penal sum of £2000 over and above the penalties above referred to.

As witness hand this day of 18

THE PEAT SCHEME.

Lord Ashley has come out in a new character. No votary of the art of panegyric could have made a more successful first attempt as Professor of the Puff Parliamentary. The line is a new one. Henceforth Rowland, Warren, and Moses will do well to take a page out of Mr. Owen's ledger, and to make interest with the O'Gorman Mahon and his noble auxiliary.

To speak seriously, we sincerely regret that persons so well intentioned should, in the height of their enthusiasm or the depth of their ignorance, have allowed themselves to believe in, and to give parliamentary publicity to, expectations so monstrously and palpably exaggerated as those said to be entertained by Mr. Owen. The public are probably at a loss to guess who this Mr. Owen is. They, no doubt, suppose him to be some chemist of research and experience—or, at least, to be a person qualified, by his education or antecedents, to form a fair judgment on the chances of an economical application of any discovery of chemical science to the particular branches of manufacture, by which Lord Ashley tells us that the quaking morasses and unproductive peat-mosses of Ireland are to be metamorphosed, first into mines of more than Californian wealth, and next into sound acres of surpassing fertility. We have heard various conjectures on the subject. Some persons have confounded Lord Ashley's friend and informant with the eminent professor whom the public recently had to thank for strangling the sea-serpent. The speculator in bog-vinegar and other peat products is, however, a far different person. He is, as we are credibly informed, a linendraper in the neighbourhood of Tottenham-court-road—nor have his customers ever suspected him of the "immense wealth" which his friends in the Senate assure us he has accumulated in this country. The more general impression among those acquainted with him is that he has been too kind-hearted and open-handed to accumulate more than a moderate fortune. Be that as it may, we wish him all success, and we only trust he may not irretrievably lose, by any wild speculations in Irish peat, such money as he may have saved in English trade. But he and his parliamentary puffers must, at all events, not be permitted to mislead and ruin others.

The O'Gorman Mahon and Lord Ashley ought to have been aware that the discovery which they have paraded with such a flourish of trumpets is no new one—though the patented processes invented by Mr. Reece may very possibly be a considerable improvement on those previously employed in establishments on Dartmoor and elsewhere. We confess that we were surprised at the total ignorance of their subject which both the honourable members displayed. They assumed that there was something almost incredible in the production of vinegar, naphtha, oil, and candles, from peat. The O'Gorman Mahon thought it necessary to assert that Mr. Owen had given his guarantee that the candle exhibited for the purpose of enlightening that very practical body, the English House of Commons, contained no admixture of "foreign matter," but was entirely produced from peat: nay, so incredible did this appear to him, that he felt it necessary, after staking his own character on Mr. Owen's veracity, and paying himself a com-

pliment on the benefit which he was conferring on the country, to call on Lord Ashley to speak to Mr. Owen's character. It seems strange that in this age of applications of science to the arts and luxuries of daily life, and in an assembly representing the greatest manufacturing community of the world, no single member should have been found to point out the practical bearings of the vaunted discovery. Any one acquainted with our manufactures, however superficially, might have told the House that all the substances mentioned may be produced from peat by the process of destructive distillation. He might have told them, too, that the gas which lights our streets, the coal-tar, and the coal-naphtha, of commerce, are all produced, on an enormous scale, by a like process of distillation. Again, he might have astonished them by speaking of a manufactory near Weymouth for producing oil, spermaceti (or, to speak more correctly, paraffine), and pitch, from the clay of that neighbourhood, known by geologists as the Kimmeridge clay; or he might have instanced the manufacture of vinegar (or pyroligneous acid), both in this country and abroad, by a similar distillation of wood. This last-mentioned manufacture comes exceedingly near the proposed manufacture from peat. It is as easy to extract tar, oil, and candle matter from a block of wood as from the decayed vegetable matter of peat. Paraffine was, in fact, first discovered in distilling beech-wood. The substance so produced is neither spermaceti nor wax, as it has been incorrectly called. It bears, however, a considerable resemblance to both, and is equal to either for the manufacture of candles, could it be produced in sufficient quantities, and at a moderate cost. But can paraffine be produced from peat in sufficiently large quantities, and at a remunerating price? Lord Ashley tells us that Mr. Owen has operated on thousands of tons of peat, and has been amply remunerated. This we believe to be a pure mistake. We question whether any of Mr. Owen's manufactured products have as yet found their way into the market. Let us, for one moment, examine for ourselves the economical bearings of the question. Lord Ashley's figures are, indeed, startling. He gravely tells us that for the trifling sum of £8 a hundred tons of peat can be dug, dried, and housed—and that, for another sum of £8, they can be converted into the ninety-one pounds' worth of manufactured products of which he gives us so flourishing a list. His acquiescing in such calculations proves how little he knows of such matters. We would remind him, and any of his admirers whom he may infect with his own unreflecting enthusiasm, that peat is a light and bulky substance. The cost of winning it is so great that in English counties, where peat and coal both abound, our peasants find bought coal a cheaper fuel than home-won peat. So much for the first cost of procuring the raw material; which, we undertake to say—though thus far we have only to do with mere rude labour—will be found greatly to exceed the estimated £8 per 100 tons. But what are we to say to the sum allowed by the noble lord for the costly alchemy by means of which the spongy masses, when obtained, are to be converted into such various manufactured products? We should like much to understand on what principles these wonderful calculations are based. What capital do Lord Ashley and his friend Mr. Owen look upon as sufficient for establishing a large manufactory of such a nature, with its brickwork and its ironwork, its retorts for distilling the raw material, its more complicated apparatus for purifying the various products, and its laboratory for conducting necessary experiments? What, again, is to be paid for the mind that must render that laboratory available, and that must generally superintend the chemical processes of the manufactory?

The above considerations might well suffice to show how exaggerated a value is placed by Lord Ashley on Mr. Reece's invention. We might go through his list of products, and ask as to each of them, various questions touching the costs of bringing them respectively into a marketable condition. The pyroligneous acid, for instance, which distils over, is contaminated with a large admixture of tar. We presume that he would set up all the necessary apparatus for purifying it, and converting it into the vinegar of commerce. Again, he promises us 600 lbs. weight of candles. Is it intended to add to all the expensive machinery required for the other departments of the factory the requisite apparatus for the melting, the moulding, the wick-plaiting, and the other multifarious processes of chandlers—and all these, too, when a ton of peat will not supply six pounds of candle material? What, too, are we to say to the £8 worth of gas, which alone would, according to his calculations, repay the whole cost of converting the raw material into £91 worth of valuable manufactures? We can, indeed, conceive the gases to be economically employed in aid of other fuel in some of the processes of the factory. But this cannot be Lord Ashley's meaning. A clear available £8 is to be realized by the *sale* of the gases evolved from the 100 tons of peat. Of a truth, our undertaking grows upon us! We are then, also, to have the gasometers and mains, and all the other apparatus of gasworks. But whither are these mains to lead? Are they to traverse the desolate moors of the wild west and south, for the purpose of lighting up brilliant chains of Whiteboy beacons? or would his lordship propose to light the disturbed districts for the easier detection and suppression of agrarian outrage?

We are sorry that such statements as those in question should have been put forth. Exaggerations of this kind do serious mischief. The failure, or comparative failure, of each overrated scheme tends to throw discredit on more sober undertakings, and to prevent the steady investment of capital in Irish improvements which bear ever so faint a resemblance to bubbles that have already burst. In the present case this is doubly to be regretted, inasmuch as soberer schemes have of late not been wanting for turning the peat bogs of Ireland to profitable purposes. We can now only name the plans of the Irish Amelioration Society, and Williams's ingenious patents for compacted peat and for peat charcoal. We believe that such charcoal might be produced much cheaper than wood charcoal—and its value in the manufacture of gunpowder, for tempering steel, and for various disinfectant processes, is indisputably very great. It is also true that the soil beneath the bogs is generally found to be very fertile. But here, too, Lord Ashley indulges in his hyperbolic vein. By so doing he is likely to discredit, rather than to advance, the efforts of those who, like the Irish Amelioration Society, propose to establish works in various districts for manufacturing compacted peat fuel and peat charcoal, and at the same time for recovering and draining the lands from which the surface bog may be gradually removed. We would not wish rudely to repress such explanations as love of country, or friendship for Mr. Owen, may hereafter call forth from a patriotic young senator; but we trust that on another occasion he will get up his brief more creditably, for public time should not be wasted, and

> "'Tis pity when sanguine statesmen
> Speak on subjects they don't understand."

Correspondence.

THEORY AND PRACTICE.

Sir,—I have read with great interest the valuable report contained in your last number of the appeal of the Phœnix Gas Company against the iniquitous injustice which the officers of one of the parishes in which their works are situated have attempted to subject them to; and, having been reminded that in the evidence given before the committee on the Great Central Gas Consumers' Bill some calculations were produced of the working of an establishment of nearly equal extent, I have been amusing myself with comparing the theory of the one with the experience of the other, principally in respect of their contribution to the public burdens; and the results are not a little curious. Many of your readers may not have time to make this examination for themselves, and I trust you will afford me a corner in your valuable columns for the following abstract of my investigation.

The first column of Mr. Croll's table, given at page 50 of your April number, contains an estimate of the working of an establishment in London, distilling 40,000 tons of coal per annum, and yielding 368,000,000 feet of gas. This estimate appears to correspond so nearly with the quantity of coal actually distilled and gas made by the Phœnix Company, that we may fairly apply the law as practically laid down in the case of the latter to test the calculations of the former.

It is not now my intention to dispute the accuracy of the estimate of revenue and working expenses; let us assume them as being correct, save the allowance for rates and taxes of £1230, which, at 5s. 9d. in the pound, represents an assessable rental of £4278. Now, there can be little doubt but that the Phœnix Gas Company will have availed themselves of the best advice and assistance of practical men to ensure justice to their cause, so far as it lay in their power, and we may therefore fairly presume that the data upon which they ascertained the assessable value of their property to be £8758 may be applied without committing any injustice to other gas establishments. Let us apply them, then, to the Great Central Gas Consumers' work No. 1, the gas rental of which is estimated to be £61,333. 4s., and the expenses of earning it, viz.:—

Production account	£25,576 13 4		
Distribution account	13,373 10 0		
		£38,950 3 4	
Profit		£22,383 0 8	
Deductions to arrive at the net rateable value:—			
Interest on tenants' capital of £9000 (the sum stated to be required) employed in carrying on the works at 5 per cent.....	£450		
Tenant's profits at 12½ per cent. on his floating capital	£1,125		
Amount of interest and tenant's profits.....		£1,575 0 0	
Net rateable value of the whole property.....		£20,808 0 8	

the rates and taxes, repairs, renewal, and reproduction being already allowed for in the expenses of £38,950. 3s. 4d.

If, then, the estimate as to revenue and expenditure is correct in other respects, the allowance for rates and taxes should have been upon an assessable value of £20,808, instead of £4278; and the rates payable would have been £5982, or nearly 4d. per 1000 feet, instead of £1230, or ·80d. per 1000 feet.

But this is not all; the foregoing would have been the case had the tribunal before which the Phœnix case was heard admitted £8758 to be the net rateable value of that property, but in their wisdom they fixed it at £13,600. If £8758 gives £13,600: then £20,808 may possibly give £32,312 before another tribunal entertaining the same erratic views; thus entailing the annual expenditure of £9289 instead of £1230. One of two things is quite clear: either the estimate of the profits of the Great Central Company are

enormously exaggerated, or the amount payable for rates and taxes is seriously understated. In this analysis I have assumed nothing; the figures are all given to me in evidence, and I have merely placed them in a tangible form for the information of your readers; but I must express my regret that you should have allowed the other fallacious statements made before that committee to remain so long uncontradicted.

Lambeth, July 28. A SURVEYOR.

[We have before expressed our regret that the case of the Great Central Gas Company should have terminated in the unsatisfactory manner in which it did; but, as we are promised a renewal of the application next session, the present companies will have an opportunity of being heard. The evidence given will not, we think, have satisfied any one acquainted with the subject of the practicability of selling gas at 4s. per 1000 feet, and paying ten per cent. dividend to the shareholders; and, as the case even on the part of the applicants is incomplete, we thought it best to suspend any further remarks for the present.]

OBSERVATIONS ON DR. FYFE'S REPORT ON THE COMPARATIVE VALUE OF COAL FOR THE PURPOSES OF ILLUMINATION.

SIR,—There appeared in your journal of the 10th of February the first part, and in that of the 10th of July the termination, of a paper "On the Comparative Value of Coal for the Purposes of Illumination," by Dr. Fyfe, the respected professor of chemistry in the University of Aberdeen. The mode of experimenting detailed therein, and the conclusions arrived at, I beg, with all deference to the author, to dissent from.

The relative values given of the gases from the various coals named are, in my humble opinion, all more or less erroneous; but, as the errors have arisen from the peculiar mode of experimenting which he has adopted, I will merely select the most extreme cases in illustration of the system. He says that, the gas from the English caking coal being taken as unity, the value of the gas from Lesmahago coal is = 6·6 (see page 5 of your journal); this I believe to be nearly three times the real value of Lesmahago gas.

The author observes, at the beginning of his paper, that it is necessary, in estimating the value of gases for illumination, to observe both their *durability* and their *illuminating power*; and he complains that some have insisted on one only, and some upon the other, of those conditions. I cannot but express surprise that any one should have disputed the author's self-evident proposition; it is the first time I have heard of its being dissented from; but I suspect that the matter at issue between the author and those whom he supposes to have dissented from him, is of a different kind, and refers to *his mode of experimenting*, in which two different and distinct tests are mixed up in one.

By his mode the two gases are each passed through a meter and burned through a jet of a certain size, the flame of each being regulated to a given height, and the times taken to consume equal volumes by each burner being noted; this is called, and properly so, the *durability*; he does not, however, by means of a *photometer*, determine the amount of light given by each flame, which is the only true mode, but estimates it by the condensation by chlorine. Now, the condensation by chlorine, if a test at all, is a test of the quantity of illuminating matter in a given volume of gas, but it is not one of the quantity of light given by any particular burner, and, consequently, it must not be used as a photometer.

If the author uses a photometer to test the relative amount of light given by two flames of the same height, from two different gases, such as English caking coal gas, and Lesmahago coal gas, he will find that the illuminating power of each is not in proportion to the condensation by chlorine of each, and, therefore, the chlorine test is not admissible under such circumstances; indeed, I cannot see upon what ground this test should be used for ascertaining the light given by two different flames. The chlorine test, as well as the specific gravity and the detonation by oxygen tests, are all inferences of the quantity of carbon or light-giving matter in equal volumes of gas; and, as it is clear that if one gas has more light-giving matter in it than another, that it will give more light, and also burn a longer time. In these *three* tests, therefore, time and quantity are included in their indications.

To give an illustration of the *lapsus* of the author's reasoning, suppose the true measure of the light of two candles to be as their respective lengths multiplied into the squares of their respective diameters; and supposing, also, another mode of measuring the light given by two candles to be as the weights of each; what the author has done (instead of contrasting the two different modes, and taking the average), has been to add the weight of each candle to its length, and thus mixed up two tests into one.

I have stated at the beginning that the author's results are *practically wrong*. I think I have shown the way in which the errors arise; and I will now, merely for the sake of elucidating the general subject, make a few remarks on the *rationale* of the modes of testing the illuminative values of gases.

There are two systems of doing this. One by ocular observation of the quantity of light given by a flame burning one volume in a certain time. To make this perfectly clear, it is a similar operation to that of estimating the quantity of water a cistern contains by noting the quantity which flows from it in a given time, and the time occupied in the discharge of the whole; time and quantity are therefore indispensably connected with the estimate.

The other is by finding the quantity of carbon in a given volume; and, as this is like estimating the quantity in a cistern by the dimensions, time is altogether excluded from the calculation.

I have been so far particular in defining the difference of these two systems of tests in consequence of their being confounded together in the paper alluded to.

The system by ocular observation can be best relied on, although it is not so convenient. It consists in burning one volume of each gas in the the same length of time; and, the times for burning each being unity, the relative quantities of light given by each flame gives their respective values; or two flames from each gas may be burned of the same intensity, when, the lights being unity, their values will be as the times of consuming one volume of each. In both cases a photometer must be used to estimate the difference between the intensity of the lights in the former instance, and to regulate the flames to the same intensity in the latter instance.

The estimate of the value of gases by analysis is based upon the assumption that carbon is the substance giving light in gas, and that coal gas is essentially composed of hydrogen and carbon. Now, hydrogen is thirteen times lighter than atmospheric air, and carbon is rather more than one half the weight of air, hence the heavier the gas is, the more carbon there is in it, and consequently the value is inferred from the specific gravity.

Chlorine has an affinity for the heavy hydro-carbons, and when mixed with coal gas attracts them from the mixture, causing a diminution of volume, and hence the diminution of volume is an indication of the light-giving substances in gas.

If oxygen be mixed with a given volume of coal gas and the mixture be exploded, the hydrogen of the gas mixing with a portion of the oxygen will form water, while the carbon mixing with another portion of oxygen will form carbonic acid gas; the quantity of carbonic acid gas produced is presumed to give data for the quantity of carbon previously existing in the gas, and hence the illuminating power. These three modes of testing the value of gas act upon one volume instantaneously, and hence time is not to be considered in their indications.

However convenient these three tests may be, they are but secondary ones, and can never be admitted in evidence against carefully-made photometric experiments; it is solely from their agreement with these that they derive any importance to which they are entitled. Nor must they be mixed up with each other, nor with the primary test; but if we find that either of them gives a certain indication of what the photometer would show, and if the manipulation is convenient, then, in the absence of the primary test, they may be relied on to a certain extent, or they may corroborate photometric experiments.

The specific-gravity test, from its simplicity, first recommends itself; but this should only be relied upon when the absence of carbonic oxide is ascertained, for the carbon of carbonic oxide has already undergone the process of combustion, and can yield no light, although it confers weight. Carbonic acid gas should also be guarded against, but, as that is always absorbed during the purification by lime, no error is to be apprehended from its presence in purified gas.

Carbonic oxide is produced in considerable quantities from Staffordshire, Derbyshire, and Welsh coals, and, indeed, from coals generally that contain much earthy matter. This gas may be detected in the flames, if a black screen be put behind it, by careful observation, as it forms a pale yellow fringe immediately on the top of the light, more particularly at the tips of a fish-tail burner. Coals of this description yield gas of a greater specific gravity, while the light given is less, than the gas from Newcastle coals, which contain less earthy matter.

The test by detonation, in the hands of a careful experimenter, I believe to be the best of the secondary tests, but it is of little use recommending it to the practical gas maker in consequence of its being so difficult of manipulation.

The chlorine test I consider inferior to both the preceding ones; I do not now speak of the mode practised by Dr. Fyfe, for that I consider altogether erroneous, but of estimating the illuminating value of a given volume (not a jet of gas) as in the two preceding tests.

If chlorine be mixed with coal gas, and light be excluded, the olefiant gas will be deposited, and therefore its amount may be accurately ascertained; but I am not aware that it has ever been proved that the quantity of olefiant in coal gas is an index of the entire illuminating value of the whole volume. There are other illuminating compounds of hydrogen and carbon in coal gas, and I believe that the ratio of olefiant to these compounds is not in all cases the same.

Thus, Lesmahago coal gas may have from four to five times the quantity of olefiant gas in it that English caking coal gas has, but I am sure no one will assert that the former has four, or even three, times the quantity of carbon in it that the latter has; and as the object sought to be ascertained is the quantity of carbon, and not the quantity of olefiant gas alone, it is clear that this test can neither agree with the primary one, nor with the best of the secondary tests.

It may be said that, by exposing the chlorine and gas to the action of light, the olefiant gas and also the light carburetted hydro-

gen will be absorbed; but we must not forget that carbonic oxide would also be absorbed during this process, which would open up a new source of error, neither am I by any means convinced that the entire illuminating power of gas is due to these two substances alone. I may speak against chemical authority, but I believe the mixtures of carbon and hydrogen are more like the mixtures of water and spirits, or water and sulphuric acid in their combinations, than the regular atomic compounds.

For the reasons asigned I prefer the photometer as the primary test; and, where two lights of the same colour and the same power are used, I would prefer the photometer by *shadows*; and, where two lights differing in intensity or colour are used, the photometer known as Bunsen's or King's.

In my own practice I use the specific-gravity as a secondary test for convenience, because specific gravity is a necessary element in all gaseous experiments, independently of the test for illuminating value; while the fact of specific gravity differing from the illuminating power indicates the presence of foreign matter.

Westminster, Aug. 1. ALEXANDER WRIGHT.

Register of New Patents.

DAVID YOOLOW STEWART, Montrose, ironfounder, for "*improvements in the manufacture of moulds and cores for casting iron and other substances.*" Patent dated Jan. 4, 1848.

The mould-box is composed of four parts, placed one above the other, and is mounted on wheels, to run on a tramway over a pit in which is a vertical screw-rod, which gear into a female screw cast in the centre of a horizontal plate. The screw-rod carries a toothed wheel underneath the horizontal plate, and is driven by a pinion keyed upon a second vertical rod, also placed in the pit, from any suitable prime mover; so that the revolution of the screw-rod causes the horizontal plate to travel up and down. On this plate are supported six or any other number of rods, which each carry at top a pattern. The bottom of the mould-box is furnished with a like number of holes, of sufficient size to fit closely round the pattern. The lower part of the mould-box is filled with sand, rammed down, and the patterns caused to move progressively through it. The remaining portions are treated in like manner, except the last, which is filled with loam. The patterns are prevented from diverging in their upward movement from the perpendicular by means of a hoop slipped over their necks. When the patterns have arrived at the end of their course, they are removed, and cores substituted upon the rods in their places, which are lowered into position by the revolution of the screw-rod and consequent descent of the horizontal plate. The melted metal is then run in.

The cores are moulded in some vegetable material, mixed with clay, upon fluted rods, and then forced through sand moulds of less internal diameters than the external diameters of the cores, in order that their surfaces may be coated with sand. To avoid the necessity of lifting the moulds when they are to be dried, it is proposed to manufacture them on trucks, and to place tramways in the stoves, so that they may be wheeled into them. To withdraw the cores from large castings, Mr. Stewart employs hydraulic presses.

Claims.—1. The mode of forming several moulds at the same time, or one mould, by the use of patterns, made to move progressively through the mould-box.

2. The mode of manufacturing and drying the moulds.

3. The mode of manufacturing the cores and of withdrawing the core-bars.

REES REECE, of London, chemist, for "*improvements in heating peat, and obtaining products therefrom.*" Patent dated Jan. 23, 1849.

The combustion of the peat is effected in a furnace similar to a foundry cupola, contracted at the base and fitted with a grating, the space below forming an air chamber; the blast may be of either hot or cold air, and used at a pressure of two to two and a half pounds per square inch. The peat is introduced at the top of the furnace, which is fitted with a movable cover. The inventor prefers that the furnaces themselves be lined with cast iron, and that they be placed in pairs side by side. A pipe leads from the head of each furnace to a closed hydraulic box, into which it dips sufficient to seal it, and from thence it is carried to a horizontal condenser, similar to those used in gas works, placed in a trough of water. A deposit is left in these pipes, from which "paraffine" in a crystalline and liquid state is obtained. The crystals are to be collected and heated till melted, and then poured into moulds and subjected to stearine presses, by which an additional quantity of liquid paraffine is obtained. The solid is capable of being moulded into candles, and the liquid is used as inflammable oil for lamps.

Claims.—1. The above process for treating peat instead of distillation.

2. The means of treating and purifying paraffine.

In a former number we alluded to the many purposes to which Vulcanized India Rubber is applied, and noticed Jennings's India Rubber Tube Gas Cocks. The principle of this cock we have since examined; and, being exceedingly simple, it appears worthy of a trial by Gas Companies.

An improved by-way valve has lately been introduced by Mr. Edge, which appears well adapted for its purpose. It is very simple in its operation, little liable to get out of order, and its use easily understood by the most ordinary workman. The expense, also, is considerably less than the ordinary slide-valves, when applied as by-way connections to meters, governors, &c.

Price Current.

The following List of Prices is corrected by an eminent wholesale house in each trade up to the latest period:—

CASTINGS, per Ton.
Average Weight of Cast Iron Pipes, per Yard.

1½ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lbs.

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow	Newcastle.	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Pig Iron, No. 1.	3 7 6	2 10 0	3 0 0	3 15 0	3 10 0
1½ and 2 inches Socket Pipes	6 0 0	5 0 0	5 10 0	5 15 0	5 15 0
2½ and 3 do. do.	5 17 6	4 17 6	5 7 6	5 12 6	5 12 6
4 and 5 do. do.	5 15 0	4 15 0	5 5 0	5 10 0	5 10 0
5 inches and upwards do.	5 12 6	4 15 0	5 2 6	5 7 6	5 7 6
Extra for bends, branches, and connection	2 0 0	2 0 0	2 0 0	2 0 0	2 0 0
Retorts, 1st fusion	5 2 6	..	..	4 17 6	5 0 0
Do. 2nd fusion	5 10 0	4 10 0	4 17 6	5 5 0	5 5 0
Tank Plates, ¼ thick and above	5 10 0	4 17 6	5 0 0	5 7 6	5 7 6
Do. less than ¼	5 15 0	5 0 0	5 5 0	..	5 10 0
Plain Castings ex. models	5 15 0	5 0 0	5 5 0	5 10 0	5 10 0

COALS.

NEWCASTLE. Unscreened.	s.	d.		DERBYSHIRE. Unscreened.	s.	d.	
Tyne Main	5	6	per ton.	Clay Cross, Deep Main, Jerries, New Birchwood, New Shipley, Sleight's, Soft Main	6	6	per ton.
Ravensworth Pelaw, Dean's Primrose, Pelton	5	9	,,	SCOTCH CANNEL.			
Medomsley, New Tanfield	6	0	,,	Kirkness.....best	23	0	,,
Pelaw	6	3	,,	Ditto .....seconds	14	0	,,
Eighton Moor, Felling Main, Hutt's Tanfield, New Pelton, Peareth, South Pelaw, Waldridge, South Peareth, South Pontop	6	6	,,	Lothian	18	0	,,
				Lesmahago	16	0	,,
				Wemyss	15	0	,,
				Dombristle, Lethans	12	0	,,
				Bridgeness, Kinneil	11	0	,,
				Lochgelly, Lumphumans	10	0	,,
Ramsay's Cannel	15	0	,,				

FIRE GOODS.

Best Fire Bricks, 60s. per thousand, at Newcastle.
Do. Clay, 12s. per ton do.

WROUGHT IRON TUBING, subject to 25 per cent. Discount.

	2 inches.	1½ inch.	1¼ inch.	1 inch.	¾ inch.	½ inch.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent welded tubes, from 4 to 12 feet, per foot	1 8	1 0	0 10	0 7	0 5	0 4½
Ditto ..... ,, 2 to 4 feet	.....One	penny	per foot	extra.		
Ditto ..... ,, 6 in. to 18 in., each	3 0	2 0	1 9	1 3	1 0	0 9
Connecting pieces, or long screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, wrought iron	3 9	2 3	1 9	1 0	0 10	0 8
Springs, wrought iron	3 9	2 3	1 9	1 0	0 10	0 8
Elbows, wrought or cast	3 9	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, wrought or cast	4 6	3 0	2 6	2 0	1 6	1 2
Iron cocks	17 6	9 6	7 6	4 6	3 3	2 6
Ditto, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing sockets	1 3	0 9	0 8	0 6	0 5	0 4
Plain sockets	1 0	0 8	0 7	0 5	0 4	0 3
Caps, plugs, nipples, backnuts	1 3	0 9	0 8	0 6	0 5	0 4
Flanches	1 9	1 6	1 3	1 0	0 9	
Syphons, 2 quart	15 0	14 0	13 6	13 0	12 0	
Ditto 1 quart	11 0	10 0	9 6	9 0	8 6	
Tongs or nippers..... each pair	9 0	7 0	6 6	5 6	4 9	4 6
Elbow burners..... per dozen	7 6	jet or batwing.				
Straight burners..... ,,	6 0	ditto.				
Stocks, dies, and taps, for 2 inch, 1½ inch, and 1¼ inch tubing	£8 10s. 0d. per set.					
Ditto, do. and do. ,, 1 ,, ¾ ,, and ½ ,, ,,	5 5 0 ,,					
Ditto, do. and do. ,, ¾ ,, 2-8 ,, and ½ ,, ,,	3 0 0 ,,					

FREIGHTS, per Ton.

Coastwise—Newcastle.	s.	d.
Chatham & Roches.	6	6
Colchest. & Maldon	6	0
Cork	9	0
Dartmouth	9	0
Devonport	9	0
Dover	6	0
Dublin	9	6
Exeter Quay	9	6
Faversham	6	0
Folkestone	6	6
Hastings	7	6
Ipswich	5	9
Jersey	9	0
London	6	6
Lowestoft	5	6
Lynn	6	0
Limerick	11	0
Margate	6	6
Newhaven	7	0
Portsmouth	7	6
Plymouth	9	0
Rye	8	0
Southampton	7	9
Totnes	8	0
Teignmouth	7	6
Weymouth	7	6
Yarmouth	5	3
Foreign.		
Algiers	20	0
Amsterdam	8	6
Antwerp	8	4
Boulogne	7	0
Barcelona	18	0
Bordeaux	10	6
Calais	7	0
Caen	9	0
Cadiz	12	6
Cette	17	0
Dieppe	8	0
Genoa	21	0
Hamburg	9	0
Havre	8	0
Honfleur	8	6
Leghorn	19	0
Lisbon	11	0
Marseilles	16	0
Nantes	12	0
Naples	20	0
Rotterdam	7	0
Rouen	11	0
Toulon	17	0
Trieste	22	0
Venice	22	0

HARPERS and MOORE, of the Delph Fire-brick and Clay Works, Stourbridge, invite the attention of Gas Companies, Engineers, Oven Builders, and all consumers, to their Stock of FIRE-BRICKS, LUMPS, or BURRS, QUARRIES, CLAY, and other Goods, a large assortment of which is always kept at their London Depôt, No. 7, Wenlock-road, City-road; also Melting-pots for Brassfounders and Metal Refiners. These articles are made in a very superior manner from clay of the very best quality, and have been proved by metal-melters (who can be referred to) to have withstood the most severe tests, and for very long periods.

Shipping orders supplied, and every description of Fire-clay Goods made to pattern or drawings on the shortest notice.

H. and M. particularly invite the attention of Gas Companies to a trial of their Fire-clay Retorts, which they are now making in a very superior manner, and of a quality which, on trial, will be found to surpass anything of the kind hitherto produced. The superior quality and peculiar admixture of their clays enable them to manufacture an article which fully admits of the necessary expansion and contraction, to allow of their being let down at the end of a season, when the usual supply of gas is not required, and again put to work for successive seasons without fear of cracking or leakage from any other cause.

H. and M. further beg to direct attention to the evidence of Mr. Croll, given before a Committee of the House of Commons, relative to the use of Clay Retorts (see "Gas-lighting Journal" of April 10, 1849, pages 43 and 44). The Clay Retorts there referred to by Mr. Croll were made at, and supplied from, the works of Harpers and Moore, as above; they were put to work in August, 1846, and are now in full and constant operation.

Testimonials can be seen, and further information obtained, on application (if by letter, prepaid), addressed as above.

PATENT FIRE-CLAY RETORTS.

ORLANDO BROTHERS and RAILTON, Manufacturers of O. Brothers's Patent, beg to state that these RETORTS being made in ONE ENTIRE OPERATION, and in ONE PIECE of any required shape, length, breadth, and height, are not liable to Cracks and Fissures, of which there is a just and general complaint; and they are consequently superior to and cheaper than any hitherto manufactured.

Prices per foot in length:—

	At Blackburn.	In London.
12 in. by 12	7s. 0d.	8s. 3d.
14 in. by 12	8s. 0d.	9s. 6d.
16 in. by 12	8s. 6d.	10s. 3d.
18 in. by 15	9s. 6d.	11s. 6d.
19 in. by 13	9s. 6d.	11s. 6d.
24 in. by 15	11s. 6d.	13s. 9d.

exclusive of the angle-iron flanges.

References and further particulars may be obtained on application to the Patentee, Gas Works, Blackburn; or to Messrs. George Barlow and Son, 9, Charterhouse-square, London.

FIRE Clay Gas Retorts.—The subscribers have for many years been extensive manufacturers of FIRE CLAY RETORTS, and supply most of the works in the centre and east coast of Scotland. They will guarantee their Retorts to last from one to two years, and to give satisfaction. They are cheaper than iron, carbonize coal more quickly, and with less fuel. Their Retorts may be seen at work at Poplar Gas Works, London.

Price £2 to £3, according to size.

Fire Bricks and all other Fire Clay Articles furnished of best manufacture, and at moderate prices.

FRASER and SANDERSON.

Inverkeithing, March 6, 1849.

Annual Expense of Retorts at the Dunfermline Gas Work, showing the difference of Expense betwixt Iron and Inverkeithing Clay Retorts.

To May, 1835, Iron Retorts used	£161	1 10
1836, Do.	154	17 9
1837, Do.	167	17 0
1838, Iron, and Clay commenced	137	3 0
1839, Iron and Clay	81	18 0
1840, Clay Retorts	20	5 0
1841, Do.	29	5 0
1842, Do.	22	10 0
1843, Do.	24	0 0
1844, Do.	19	2 10
1845, Do.	14	14 0

TO GAS COMPANIES.

JOHN EUNSON, Gas Engineer and Contractor for the Erection of Gas Works, continues to manufacture CLAY RETORTS upon the most approved principle, and of the best material.

Wolverhampton, May 5, 1849.

M. SHEEN, Gas and Railway Lantern Maker, 90½, Holborn-hill, begs to inform Managers of Gas Works, &c., that she continues to contract and supply Lanterns on reasonable terms, and keep them in repair by the year.

RAMSAY'S Garesfield Colliery, NEWCASTLE-UPON-TYNE.

COKING COAL and COKE of the best quality; superior CANNEL COAL, and FIRE GOODS of all descriptions.

Analysis of Garesfield Coke, by Dr. Richardson, of Newcastle:—

Carbon	97·60.
Ashes	1·55.
Sulphur	0·85.

Products of Ramsay's Newcastle Cannel Coal, as ascertained by Drs. Leeson and Miller, and G. H. Palmer, Esq.:—

Gas per Ton of Coal, cubic feet .. 9·667.
Specific Gravity .. .. 0·731.
Illuminating Power .. .. 1·85 to 2·03.
ordinary Newcastle Coal Gas being 1.
Coke per Ton of Coal .. .. .. 13½ cwt.

Office, Broad Chare, Newcastle-upon-Tyne; and 46, Fenchurch-street, London.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

CROLL and GLOVER, Patent Dry Gas Meter Manufacturers, Suffolk-street, CLERKENWELL-GREEN, LONDON, beg respectfully to call attention to the following extracts from testimonials in favour of their Meters. The respectability of the parties will be esteemed by all acquainted with gas matters as affording the most indubitable evidence of the superiority of their Patent Dry Gas Meters, proving that gas companies and gas consumers may rely on them for a just and unvarying registration, durability, and the absence of all trouble arising from condensation of water in the fittings, and the impossibility of their being stopped by freezing in the coldest climates.

CROLL and GLOVER take this opportunity of remarking to Gas Companies that the apprehension so generally entertained by them, viz., that if Dry Meters were introduced into their districts their Stock of Water Meters would be thrown on their hands, while this has not happened even with those Gas Companies who have for years back purchased none but Dry Meters; this apprehension ought to lead Gas Companies to a speedy investigation into the merits of Dry Meters, so that they may not, year after year, be increasing their stock of Water Meters, which they themselves apprehend must one day be thrown out of use.

CROLL and GLOVER humbly think that the following extracts prove that the merits of their Meter are entitled to prompt attention of Gas Companies.

Almost all the testimonials bear the date of November, 1848.

EXTRACTS.

"The Chartered Gas Company have purchased and fixed up above 2,000."—GEORGE LOWE, *Civil Engineer, F.R.S., &c., Consulting Engineer to the Chartered Gas Light and Coke Company, London.*

"We have in this district from seven to eight hundred, and are daily fixing more."—F. I. EVANS, *Superintendent at Chartered Gas Light and Coke Company's Station, Brick-lane.*

"I invariably found the flames perfectly steady, and the gas accurately measured."—A. H. STILL, *Superintendent at Chartered Gas Light and Coke Company's Station, St. Luke's.*

"I beg to state that out of 800 Meters of the square form, and anti-corrosive metal, I find only twenty have been entered in our return-book, chiefly for broken index-glasses. The company are continuing to purchase and fix up your Meters in considerable quantities."—WILLIAM MONRO, *General Superintendent and Engineer of the Phœnix Gas Light and Coke Company, London.*

"I have much pleasure in stating that the Meters we have received with your last improvements have given great satisfaction."—JOHN AIRD, *Superintendent of the Phœnix Gas Light and Coke Company's Station, Greenwich.*

"I have had some of them in use for nearly four years. In certain situations exposed to the influence of the climate I have found them to be the only description fit for use, as well as in confined and overheated situations, where the water in the Water Meters is acted upon by evaporation."—ROBERT LAING, *Secretary and Superintendent of the Independent Gas Light and Coke Company, London.*

"Having had, in all, up to the present time under my inspection 609 Meters of your manufacture, a very good opportunity has thus been afforded me of judging of their merits. The result of my observation in respect of registration and steadiness of light is, that the Meters have given perfect satisfaction."—D. METHVEN, *Engineer and Superintendent to the Commercial Gas Light and Coke Company, London.*

"The advantages which I have found attending the use of your Dry Gas Meters, in preference to the Wet Meters, are so important, that nothing would induce me to return to the use of the latter. As Station Meters yours have the additional advantage, that there is no water-line to attend to, or to be subject to neglect."—CHARLES DIXON, *Engineer of the Chichester Gas Light and Coke Company.*

"I have also had sufficient opportunity of knowing that they are not affected by the most severe frost, nor where one of them was fixed did I ever know of condensation taking place in the inside gas fittings of any premises."—SAMUEL PONTIFEX, *Manager, Winchester Gas Light and Coke Company.*

"We are now using your Meters solely."—CHARLES PURVES, *Manager, Gas Works, Gosport.*

"They are a substantial and good article, of superior workmanship and material; they do their work exceedingly well, and, after being once fixed, they occasion no further trouble. I assert that they do not alter in their measurement, as does the Water Meter."—J. THOMAS, *Manager, Consumers' Protective Gas Light Company, Woolwich.*

"Previous to using them I held theoretical objections, which I can now say have been removed, and their superiority as an instrument of unvarying measuring capacity has been fully established."—EDWARD H. THORMAN, *Superintendent of the West Ham Gas Company.*

"I have delayed giving my opinion of your Meters until I had had another winter's experience; and, notwithstanding some of them were placed in the open air, not one became fixed. We have had a short winter, but the frost is very severe."—P. T. W. de TIMMERMAN, *Director of the City of Leyden Gas Works.* January 26, 1849.

Station Meters, Station Governors, Pressure Registers, Experimental Meters, and Specific Gravity Apparatus.

CANNEL COAL.

JOHN HENDERSON and CO. respectfully invite the attention of Managers of Gas-works to the annexed Report by Professor Fyfe upon their PARROT or CANNEL COAL, which continues to be shipped at Burntisland to any extent. Price 10s. per ton, f. o. b.

Apply to Messrs. R. W. KENNARD and Co., 67, Upper Thames-street, London; or to JAMES CONNEL, Shipping Agent, Burntisland.

Lochgelly Coal and Iron Works, by Burntisland, March, 1849.

REPORT ON THE VALUE OF LOCHGELLY PARROT COAL FOR THE MANUFACTURE OF GAS.

In the trials made with this Coal 14 lbs. of coal were carbonized. The quantity of gas given off was estimated by meter; the illuminating power of the gas was ascertained by the chlorine test, the durability by meter—consuming the gas with a single jet of 1·33 of an inch diameter, and with a 5-inch flame. The specific gravity was taken in the usual way.

The following are the results, being the average of several trials:—

Cubic feet of gas ..... 9123· per ton of coals.
Illuminating power of gas ... 14·5 candles.
Durability ..... 65·30 minutes.
Specific gravity of gas ..... 567·

The Lochgelly Coal may be considered as a fair average quality of Parrot Coal; for, though it is beneath the Lesmahago Coal, not only as regards the quantity of gas afforded, but also as to the illuminating power and durability of the gas, yet it is equal to the average quality of the Parrot Coal of the Lothians and of Fifeshire.

It is much more valuable than the English Caking Coal and English Parrot Coal now in general use, in regard to their relative value for the amount of light afforded by the combustion of their gases, as the following table will show:—

COALS.	Cubic Feet of Gas from Ton of Coal.	Illuminating Power of Gas by Chlorine Test.	Durability of Gas with Jet of 1·33 of an Inch. Min.	Sec.	Comparative Value of the Coals according to the Light afforded by the Consumpt of their Gases.	
English Caking Coal	8000	4·33	40	24	1·	—
English Parrot ditto	9500	7·6	44	0	...	1·
Lochgelly ditto	9123	14·5	65	30	6·18	2·71

Accordingly, the Lochgelly Coal is, on an average, more than six times the value of English Caking Coal, and more than twice and a half as valuable as the average of English Parrot Coal, for affording light by the combustion of their gases.

A ton of Lochgelly Coal leaves 1200 lbs. of coke.

In the above estimate the value of the ammoniacal liquor, tar, &c., is not taken into account.

A. FYFE, Professor of Chemistry.

Feb. 28, 1849. King's College University, Aberdeen.

BRYMBO Iron Works, Foundry, and COLLIERY, near WREXHAM, NORTH WALES. Shipping Ports:—Birkenhead, and Saltney, near Chester, on the river Dee.

Report of Experiments made at the Wrexham Gas Works on the 3rd, 4th, and 5th, and at the Chester Gas Works on the 6th and 7th, of August, 1848, upon the Gas Coals raised at the Brymbo Colliery, by Mr. A. WRIGHT, Gas Engineer, London,

At one work Fire-clay Retorts were used at a high temperature; at the other Iron Retorts at a moderate temperature; the results are, therefore, given separately, Clay and Iron being given as synonymous with high and moderate heats.

TWO YARD COAL.

CLAY RETORTS, 2 cwt. charge. 5½ hours.

Per Ton:
Gas Cubic Feet 8880.
Sp. Gr. first of Charge ·596 / middle ·462 / last ·300 — Mean Sp. Gr. 463. 5 feet per hour, equal to 15 candles.
Gas by Weight 294·94 lbs.
Tar 70 „
Coke 12 cwt. 22 lbs.

The Coke of very superior quality.

POWELL COAL.

CLAY RETORTS, 2 cwt. charge. 5 hours.

Per Ton:
Gas Cubic Feet 10165.
Sp. Gr. first of Charge ·586 / middle ·456 / last ·428 — Mean Sp. Gr. 459. 5 feet per hour, equal to 14·88 candles.
Gas by Weight 337·8 lbs.
Tar 70 „
Coke 11 cwt. 56 lbs.

POWELL COAL.

IRON RETORTS, 1½ cwt. charge. 5 hours.

Per Ton:
Gas Cubic Feet 8250.
Sp. Gr. first of Charge ·560 / middle ·465 / last ·300 — Mean Sp. Gr. 470, equal to 15·3 candles, at 5 feet per hour.
Gas by Weight 295·6 lbs.
Tar 105·0 „
Coke 11 cwt. 56 lbs.

This Coal yields Gas very easily, of a good quality, and at a moderate heat. The Coke is also, though small, very good. It is therefore well fitted for those who use Iron Retorts and require a superior Gas.

London: Printed by THOMAS GREAVES BARLOW, of 32, Bucklersbury, parish of St. Stephen, Walbrook (at the office of Palmer and Clayton, 10, Crane-court, Fleet-street); and published by him at the Office, No. 21, Paternoster-row, in the parish of St. Faith, all in the City of London.—Friday, August 10, 1849.